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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,389	07/29/2003	Peter W. Shackle	N8226	6527
23456	7590	04/20/2005		
WADDEY & PATTERSON 414 UNION STREET, SUITE 2020 BANK OF AMERICA PLAZA NASHVILLE, TN 37219			EXAMINER TWEEL JR, JOHN ALEXANDER	
			ART UNIT 2636	PAPER NUMBER

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,389

Applicant(s)

SHACKLE, PETER W.

Examiner

John A. Tweel, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 26-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-19 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 14, 15 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>4/5/05</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/3/03</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-25, drawn to LED variable power control, classified in class 340, subclass 815.45.
 - II. Claims 26-31, drawn to LED light drives, classified in class 315, subclass 200R.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because an LED drive does not necessarily require ac-dc converters, inverters, and rectifiers. The subcombination has separate utility such as periodic activation of light emitting diodes.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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3. During a telephone conversation with Larry Brantley on 4/5/05 a provisional election was made without traverse to prosecute the invention of group I, claims 1-25. Applicant in replying to this Office action must make affirmation of this election. Claims 26-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

4. The disclosure is objected to because of the following informalities:
- Page 4, Line 5: The acronym LED should be in all capital letters at the end of the line.
 - Page 9, Line 21: The word --resistor-- has been misspelled in this line.
- Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 5-8, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by **Hochstein** [U.S. 5,783,909].

For claim 1, the light emitting diode drive taught by **Hochstein** includes the following claimed subject matter, as noted, 1) the claimed LED voltage supply is met by

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the switch mode power supply (No. 16) that receives an input voltage signal (No. 20) and generates an output voltage signal (No. 18) that can be applied to an LED having an effective lifetime, and 2) the claimed voltage controller is met by the sensor (No. 22, 24) and filter (No. 28) connected to the voltage supply and adapted to control the output voltage signal so that light output by the LED remains approximately constant over the operating lifetime of the LED.

For claim 5, the drive of **Hochstein** operates using a closed loop control scheme.

For claim 6, the drive of **Hochstein** comprises a light sensor (No. 22) adapted to generate a light signal indicative of light output of the LED light source, and wherein the voltage controller is adapted to control the output voltage signal based on the light signal.

For claim 7, the current supply for a light emitting diode taught by **Hochstein** includes the following claimed subject matter, as noted, 1) the claimed current generating circuit is met by the switch mode power supply (No. 16) that receives an input current signal (No. 20) and generates an current signal (No. 18) that can be applied to an LED having an effective output, and 2) the claimed current controller is met by the sensor (No. 22, 24) and filter (No. 28) connected to the power supply and adapted to control the output current signal so that the current signal compensates for reductions in the effective light output of the LED, the power supply (No. 16) able to adjust the voltage or current (Col. 3, Lns. 8-12).

For claim 8, the current supply of **Hochstein** controls the current output based on a reduction in the effective light output of the light source.

For claim 19, the LED control system taught by **Hochstein** includes the following claimed subject matter, as noted, 1) the claimed LED current converter is met by the power supply (No. 16) that receives current from a current source and generates a current signal that can be supplied to an LED light source (No. 12) having an effective lifetime and output, 2) the claimed light sensor is met by the light sensor (No. 22) adapted to receive light output by the LED and generate a light signal, and 3) the claimed LED controller is met by said light sensor working in conjunction with the filter (No. 28) and said power supply (No. 16) adapted to adjust the current signal output by the converter based on the light signal so that the current compensates for degradations and maintains the light output by the LED at a relatively constant level over the lifetime.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 7, 11-13, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kimball** [U.S. 5,493,183].

For claim 1, the lamp drive taught by **Kimball** includes the following claimed subject matter, 1) the claimed voltage supply is met by the controller (No. 11) having its own input voltage signal from a battery (No. 11) and outputs a voltage that can be applied to a lamp, and 2) the claimed voltage controller is also met by the controller (No.

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11) connected to the voltage supply and controls the voltage signal so that light output by the lamp remains approximately constant.

The reference does not explicitly state LED light sources; however, the reference does mention electroluminescent (EL) lamps. As LED are one type of EL lamps, this is considered a small but quite obvious variation on the prior art as this circuitry can definitely be applied to LED sources as they are one of a large number of EL devices.

For claim 2, the drive of **Kimball** is adapted to operate using an open loop control scheme.

For claim 3, the Table of **Kimball** shows the predetermined times during the lifetime of the light source that the voltage signal is increased.

For claim 4, the voltage signal of **Kimball** is controlled based on the average degradation rate and timing of the light source.

For claim 7, the current supply for a lamp taught by **Kimball** includes the following claimed subject matter, as noted, 1) the claimed current generating circuit is met by the controller (No. 11) that receives a current from a power source (No. 22) and generates a current signal that can be supplied to a lamp, said current adjustment mentioned in the specification (Col. 5, Lns. 46-50), and 2) the claimed current controller is also met by the controller (No. 11) that controls the current signal output by the current generating circuit so that the signal compensates for reductions in the light output of the light source. The reference does not explicitly state LED light sources; however, the reference does mention electroluminescent (EL) lamps. As LED are one type of EL lamps, this is considered a small but quite obvious variation on the prior art

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as this circuitry can definitely be applied to LED sources as they are one of a large number of EL devices.

For claim 11, the supply of **Kimball** increases the signal output at a variable rate over the lifetime of the light source.

For claim 12, the Table of **Kimball** displays a predetermined degradation profile and the controller is adapted to control the current signal output based on this profile.

For claim 13, the power supply for a light source taught by **Kimball** includes the following claimed subject matter, as noted, 1) the claimed power converter is met by the controller (No. 11) that receives power from a power source (No. 22) and generates at output power signal to a light source, and 2) the claimed power controller is met by the controller having a microprocessor (No. 21) to control the output power signal so that is compensates for degradations in the light output of the lamp and ensures that light output remains relatively constant over the operating lifetime of the light source. There is no mention of an LED in the reference. The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 1 above.

For claim 16, the power supply of **Kimball** also includes a timer (No. 38) that measures the amount of time that the lamp is connected to the drive and increasing the power signal when the measured time exceeds a reference time.

For claim 17, the controller (No. 11) with timing module (No. 38) of **Kimball** senses a lamp installed and activates the timing module at the start of the operating lifetime of the lamp.

For claim 18, to reset the timing module when the lamp of **Kimball** is replaced is not considered a patentable innovation, as the timing module must be reset at some time to give an accurate reading of the real operating time of the lamp. Automatic resetting is one obvious method as this insures a new timing as soon as a new lamp is installed.

9. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hochstein**.

For claim 24, to stop outputting the current signal when the light source is disconnected is not new in the prior art. Many power sources stop supplying power to a socket when a light is disconnected for simple safety reasons. This would be considered an obvious variation on the prior art.

For claim 25, the claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejections of claims 25 and 18 above.

10. Claims 9, 10, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hochstein** in view of **Dussureault** [U.S. 6,236,331].

For claim 9, the supply of **Hochstein** includes the claimed subject matter as discussed in the rejection of claim 7 above. However, there is no mention of adapting to continually increase the current signal over the effective operating lifetime of the LED.

The LED traffic light intensity controller taught by **Dussureault** teaches a system that constantly increases the power level of the LEDs used in a traffic light over the

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entire lifespan of the LED. This insures that the LED does not drop below the standard minimum intensity required in order to insure safety.

The LEDs used in Hochstein may very well end up in a traffic light system where safety is of the utmost concern. The Dussureault system provides a useful improvement wherein safety protected. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a continual increase in current or power for the purpose of maintaining the minimum intensity required to insure safety.

For claim 10, the power of **Dussureault** is increased at a constant rate over the operating lifetime of the light source.

For claim 21, the **Dussureault** reference stops increasing the power signal when the lifetime of the LED light source is exceeded.

For claim 22, the **Dussureault** reference stops supplying the power signal when the lifetime of the LED is exceeded.

For claim 23, Figure 1 of **Dussureault** depicts the percentages of the output intensity after the LED has been operated for a predetermined number of hours. The power signal must be increased this percentage over the same amount of time.

11. Claims 14, 15, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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12. The following is a statement of reasons for the indication of allowable subject matter:

Each objected claim contains subject matter that is not found in an obvious combination in the prior art, such as the conversion of the low frequency ac power signal into a dc power signal, converting this dc signal into a high frequency ac power signal and converting the high frequency ac power signal into the output power signal.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bourgault et al [U.S. 6,667,623] deactivates one or more LEDs allowing a continued use of the signal.

Martineau et al [U.S. 6,717,526] uses a light pipe collector to capture LED light.

Rooke et al [U.S. 6,798,152] provides closed loop control using constant current switching techniques.

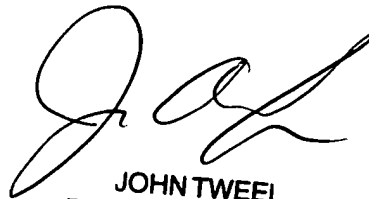
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel, Jr. whose telephone number is 571 272 2969. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Hofsass can be reached on 571 272 2981. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAT
4/15/05



JOHN TWEEL
PRIMARY EXAMINER